1755 #3

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: **Minoru WAKI et al**

Serial No.: **09/916,316** Group Art Unit: **1755**

Filed: **July 30, 2001** Examiner: **Not Yet Assigned**

For: **WATER-BASED INK COMPOSITION FOR INK-JET PRINTING, INK-JET PRINTING METHOD USING THE SAME AND PRINTED MATTER**

INFORMATION DISCLOSURE STATEMENT PURSUANT TO 37 CFR 1.97(b)

Commissioner for Patents
Washington, D.C. 20231

October 30, 2001

Sir:

The attention of the Patent and Trademark Office is hereby directed to the documents listed on the attached Form PTO-1449. One copy of each of these documents is attached.

No fee or certification is required in connection with this Information Disclosure Statement, since it is being submitted prior to the issuance of a first official action on the merits or expiration of the three month period following the filing date or the entry of the national stage of the above-captioned application.

The above information is presented so that the Patent and Trademark Office can, in the first instance, determine any materiality thereof to the claimed invention. See 37 CFR 1.104(a) concerning the PTO duty to consider and use any such information. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the documents cited in the attached Form PTO-1449 be made of record therein and appear on the first page of any patent to issue therefrom.

The Commissioner is authorized to charge our Deposit Account No. 01-2340 for any fee which is deemed by the Patent and Trademark Office to be required to effect consideration of this statement.

Respectfully submitted,

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Enclosures: PTO-1449 and 2 references
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COVER LETTER OF I.D.S.

1. Japanese Unexamined Patent Publication No. 248210/1994

2. Japanese Unexamined Patent Publication No. 194775/1997

Partial Translation of the Publications

1. Japanese Unexamined Patent Publication No. 248210/1994: Column [0014]

[0014] As a dispersing agent used in an ink of the present invention, there can be used are any polymers having a hydrophilic structural portion and a hydrophobic structural portion, and soluble in an aqueous solution of an amine and a base, and preferably having a weight average molecular weight of 3000 to 50000, particularly 10000 to 30000. These can be used singly or in combination of at least two thereof. Examples thereof are polyacrylic acid, polymethacrylic acid, styrene-acrylic acid copolymer, styrene-acryl-acrylic acid alkyl ester copolymer, vinyl naphthalene-acrylic acid copolymer, vinyl naphthalene-maleic acid copolymer, styrene-maleic acid copolymer, styrene-maleic acid-acrylic acid alkyl ester copolymer, styrene-methacrylic acid copolymer, styrene-methacrylic acid-acrylic acid alkyl ester copolymer, styrene-α-methylstyrene-acrylic acid copolymer, styrene-α-methylstyrene-acrylic acid-acrylic acid alkyl ester copolymer, styrene-maleic acid half ester copolymer, maleic acid-maleic anhydride copolymer, and copolymers of monomers such as acrylonitrile, vinyl acetate, acrylamide, vinyl chloride, vinylidene chloride, ethylene, hydroxyethylacrylate, glycidyl methacrylate, and the like.

2. Japanese Unexamined Patent Publication No. 194775/1997: Columns [0009] and [0010]

[0009] A ternary copolymer made from acrylic acid, styrene, and α-methylstyrene, which may be referred to as "ternary copolymer" hereinafter, imparts much stable dispersion to carbon black. The ternary copolymer is used preferably in an amount of 0.5 to 10 % by weight based on the ink. When the amount is lower, conductivity by carbon black is heightened so that a fear of short circuit, for example, in deflecting electrodes of continuance type multi-head is increased. When the amount is higher, it becomes difficult to set low the viscosity of the ink, and droplet forms insufficiently. The ternary copolymer made from acrylic acid, styrene, and α-methylstyrene has a molecular weight of preferably 2000 to 8000, more preferably 2000 to 5000 from viewpoints of dispersibility of pigments and discharge stability of ink, resistance of ink solid printing surface, and the like. The ternary copolymer preferably has an acid number of 90 to 130 from viewpoints of waterproof resistance on a paper surface, and ink resolubility on a head part, resistance of the ink solid printing surface, and the like.

[0010] The ternary copolymer can be obtained by a known for copolymerization of acrylic acid, styrene, and α-methylstyrene. A preferable copolymer has a ratio of 2.0 to 4.0 mole, preferably 2.2 to 3.5 mole of styrene, and 0.3 to 1.5 mole, preferably 0.5 to 1.2 mole of α-methylstyrene based on 1 mole of acrylic acid. A copolymer having this range of ratio has excellent balance among stability of dispersion, water proof resistance, resolbility, high resistance of the solid image forming surface.